Black and women scientists are less likely to have multiple research grants, finds study

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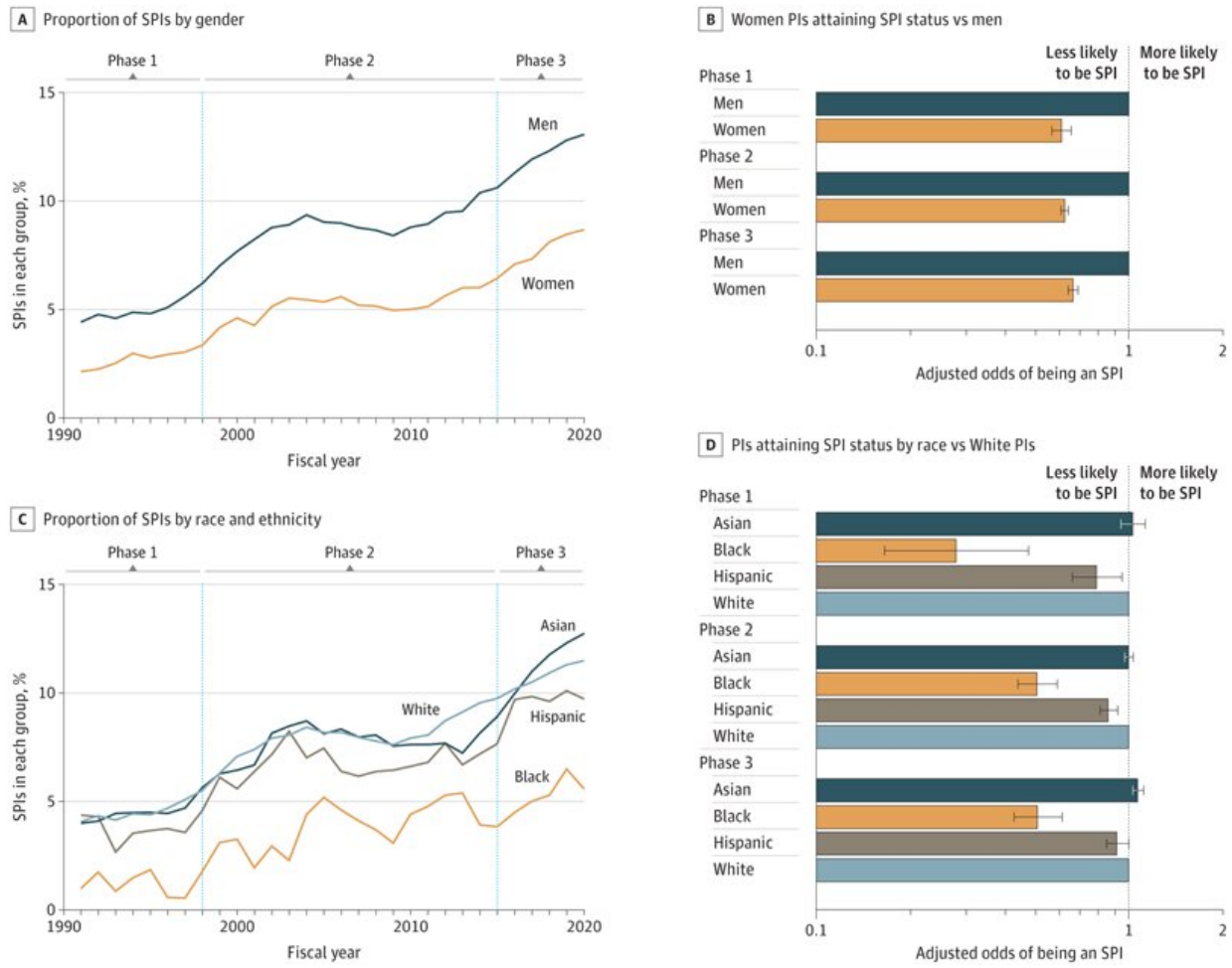

Gender, Ethnic, and Racial Diversity Among SPIs Error bars indicate 95% CIs. In panel B, odds ratios adjusted for career stage (early, middle, and late) and degree; in panel D, odds adjusted for career stage and degree. Credit: *JAMA Network Open* (2023). DOI:10.1001/jamanetworkopen.2023.0855pen.2023.0855

A growing number of researchers have more than two grants simultaneously from the National Institutes of Health (NIH), but women and Black researchers are less likely than white men to be among them, a new Yale study finds. This disparity, the researchers say, has implications for research innovation and public trust and can impact career trajectories.

The findings were published Feb. 28 in *JAMA Network Open*.

"Having multiple grants yields career advantages," said Mytien Nguyen, an M.D.-Ph.D. student at Yale School of Medicine and lead author of the study. "Researchers are more likely to be retained and promoted, have more of a voice at their institutions and in shaping national research agendas, and have bigger labs that train more young researchers."

For the study, Nguyen and her colleagues first investigated how many NIH-funded researchers had multiple, simultaneous grants and whether that number had changed over time. They found that the percentage of researchers with three or more grants tripled from 1991 to 2020, increasing from 3.7% to 11.3% of NIH-funded researchers. Further, the percentage of researchers with four or more grants increased more than six-fold and those with five or more grants nearly 10-fold.

The researchers then evaluated the gender, racial, and ethnic composition of those with three or more NIH grants, which they refer to as "super principal investigators," or super PIs. There were two years within the three-decade span—1998 and 2015—when the NIH budget increased significantly. The researchers assessed funding rates throughout the time period and within the years before and following major budget increases.

The percentage of super PIs did increase across demographics from 1991 to 2020. In 1991, 2.1% of women and 4.4% of men were super

PIs. By 2020, rates had increased to 8.7% and 13.1%, respectively. Similarly, at the start of the assessed period, 4.1% of white researchers, 4.0% of Asian researchers, 4.4% of Hispanic researchers, and 1.0% of Black researchers were super PIs. By 2020, those rates increased to 11.5%, 12.8%, 9.8%, and 5.6%, respectively.

But despite these improvements, disparities in super PI status persisted.

"We found that, in the years since the most recent large NIH budget increase, which was in 2015, women and Black researchers were less likely than men and white researchers to be super PIs," said Nguyen. "And when we looked at the intersectionality between gender, race, and ethnicity, we found that Black women were the least likely to be super PIs."

In fact, Black women were 71% less likely to attain super PI status than white men in the years since 2015.

These inequities likely have wide-reaching effects on biomedical research, said Down Boatright, the senior author who conducted the research while at Yale School of Medicine and is now the vice chair of research in the Department of Emergency Medicine at New York University Grossman School of Medicine.

"Concentrating resources among investigators who are more likely to be white and male has implications for the level of innovation we're going to see in the science that's produced. It's also going to affect the trust that people in the United States have in scientific research," Boatright said. "Also, research has shown that people of color are not well-represented in clinical trials and a homogenous research workforce is going to affect the diversity we see in clinical trials, which will impact the outcomes we can deliver to our patients."

There are likely many contributing factors to these disparities, the researchers said.

Differences in access to mentorship from high-level researchers may play a role. Previous research has shown that Black and women scientists are less likely than white scientists and men to be mentored by senior researchers with more experience and influence in their fields. Investment in mentorship initiatives for Black and women faculty could help ensure they have access to peer networks essential for scientific and career advancement and help close funding gaps, said the researchers.

Structural interventions in how research grants are evaluated may also be necessary.

"Study sections—the groups that evaluate grant applications—tend to have higher percentages of Asian and white men than other groups," said Nguyen. "Recent research has shown that study sections with more women fund more grants from female applicants. So diversifying study sections could help address these disparities."

Additionally, Boatright notes, some NIH initiatives have begun requiring grant applicants to submit plans for how they will incorporate diverse perspectives into their research teams and projects.

"Diversity has been shown to enhance the quality of science," he said. "These efforts can be a strong incentive for increasing diversity on research teams and instituting this sort of requirement NIH-wide would have a huge impact."

Going forward, the research team plans to investigate the diversity of multiple-PI grants and evaluate funding rates across socioeconomic status and for researchers with disabilities.

For this study, the researchers were not able to assess funding rates for Indigenous scientists because the number of Indigenous researchers with NIH grants was too low for analysis.

"It's important that doesn't happen in the future," said Nguyen. "So we hope to do some advocacy in regards to promoting NIH funding for Indigenous investigators."

More information: Mytien Nguyen et al, Gender, Racial, and Ethnic and Inequities in Receipt of Multiple National Institutes of Health Research Project Grants, *JAMA Network Open* (2023). DOI: 10.1001/jamanetworkopen.2023.0855pen.2023.0855. jamanetwork.com/journals/jaman … /fullarticle/2801787

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